

Sustainability Roadmap: Water Efficiency and Conservation

Progress Report and Plan for Meeting
the Governor's Sustainability Goals
for California State Agencies

California Conservation Corps

Edmund G. Brown Jr., Governor

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California Conservation Corps

Sustainability Road Map: Water Efficiency and Conservation

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Acronyms

BMP	Best Management Practices
CALGREEN	California Green Building Code (Title 24, Part 11)
DGS	Department of General Services
EO	Executive Order
DWR	Department of Water Resources
ESPM	Energy Star Portfolio Manager
GHGe	Greenhouse Gas Emissions
GSP	Groundwater Sustainability Plan
LCM	The Landscape Coefficient
LEED	Leadership in Energy and Environmental Design
MM	Management Memo
MAWA	Maximum Applied Water Allowance
MWELO	Model Water Efficient Landscape Ordinance
SAM	State Administrative Manual
SGA	Sustainable Groundwater Agency
SGMA	Sustainable Groundwater Management Act
WMC	Water Management Coordinator
WUCOLS	Water Use Classifications of Landscape Species

Glossary

Backflow - is the undesirable reversal of the flow of water or mixtures of water and other undesirable substances from any source (such as used water, industrial fluids, gas, or any substance other than the intended potable water) into the distribution pipes of the potable water system.

Back flow prevention device - a device that prevents contaminants from entering the potable water system in the event of back pressure or back siphonage.

Blowdown - is the periodic or continuous removal of water from a boiler to remove accumulated dissolved solids and/or sludge. Proper control of blowdown is critical to boiler operation. Insufficient blowdown may lead to deposits or carryover. Excessive blowdown wastes water, energy, and chemicals.

Compost - is the product resulting from the controlled biological decomposition of organic material from a feedstock into a stable, humus-like product that has many environmental benefits. Composting is a natural process that is managed to optimize the conditions for decomposing microbes to thrive. This generally involves providing air and moisture, and achieving sufficient temperatures to ensure weed seeds, invasive pests, and pathogens are destroyed. A wide range of material (feedstock) may be composted, such as yard trimmings, wood chips, vegetable scraps, paper products, manures and biosolids. Compost may be applied to the top of the soil or incorporated into the soil (tilling).

Critical overdraft - a condition in which significantly more water has been taken out of a groundwater basin than has been put in, either by natural recharge or by recharging basins. Critical overdraft leads to various undesirable conditions such as ground subsidence and saltwater intrusion.

Ecosystem services - are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. Ecosystem services can be categorized in four main types:

- Provisioning service are the products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines.
- Regulating services are the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control.

- Habitat services provide living places for all species and maintain the viability of gene-pools.
- Cultural services include non-material benefits such as spiritual enrichment, intellectual development, recreation and aesthetic values.

Grasscycling -refers to an aerobic (requires air) method of handling grass clippings by leaving them on the lawn when mowing. Because grass consists largely of water (80 percent or more), contains little lignin and has high nitrogen content, grass clippings easily break down during an aerobic process. Grasscycling returns the decomposed clippings to the soil within one to two weeks acting primarily as a fertilizer supplement and, to a much smaller degree, mulch. Grasscycling can provide 15 to 20 percent or more of a lawn's yearly nitrogen requirements

Hydrozone – is a portion of a landscaped area having plants with similar water needs that are served by one irrigation valve or set of valves with the same schedule.

Landscape Coefficient Method (LCM) - describes a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals.

Landscape water budget - is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Model Water Efficient Landscape Ordinance (MWELO) - The Water Conservation in Landscaping Act was signed into law on September 29, 1990. The premise was that landscape design, installation, and maintenance can and should be water efficient. Some of the provisions specified in the statute included plant selection and groupings of plants based on water needs and climatic, geological or topographical conditions, efficient irrigation systems, practices that foster long term water conservation and routine repair and maintenance of irrigation systems. DWR adopted the Model Ordinance in June of 1992. One element of the Model Ordinance was a landscape water budget. In the water budget approach, a Maximum Applied Water Allowance (MAWA) was established based on the landscape area and the climate where the landscape is located. The latest update to MWELO was in 2015. MWELO applies to all state agencies' landscaping.

Mulch – is a layer of material applied on top of soil. Examples of material that can be used as mulch include wood chips, grass clippings, leaves, straw, cardboard, newspaper, rocks, and even shredded tires. Benefits of applying mulch include reducing erosion and weeds and increasing water retention and soil vitality. Whenever possible, look for mulch that has been through a sanitization process to kill weed seeds and pests.

Trickle flow – a device that allows users to reduce flow to a trickle while using soap and shampoo. When the device is switched off, the flow is reinstated with the temperature and pressure resuming to previous settings.

Sprinkler system backflow prevention devices – are devices to prevent contaminants from entering water supplies. These devices connect to the sprinkler system and are an important safety feature. They are required by the California Plumbing Code.

Sub meter- a metering device installed to measure water use in a specific area or for a specific purpose. Also known as dedicated meters, landscape sub meters are effective for separating landscape water use from interior water use, evaluating the landscape water budget and for leak detection within the irrigation system.

Water Budget - A landscape water budget is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Water-energy nexus - Water and energy are often managed separately despite the important links between the two. Twelve percent of California's energy use is related to water use with nearly 10 percent being used at the end water use. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems as well as wastewater collection and treatment.

Water Shortage Contingency Plans - Each urban water purveyor serving more than 3,000 connections or 3,000 acre-feet of water annually must have an Urban Water Shortage Contingency Plan (Water Shortage Plan), which details how a community would react to a reduction in water supply of up to 50 percent for droughts lasting up to three years.

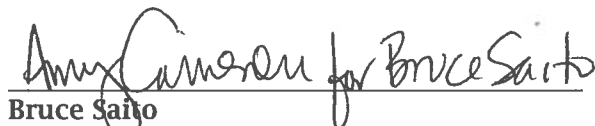
EXECUTIVE SUMMARY

The California Conservation Corps (CCC) is comprised of young adults, ages 18 to 25 (and veterans to age 29), who work on conservation projects on public lands in cities and rural areas. Projects range from restoring fish and wildlife habitat, to installing energy and water-efficient improvements, building trails, and improving forest health. As one of the state's emergency work forces, the CCC responds to fires, floods, pest infestations, earthquakes and oil spills.

The CCC currently owns and leases 26 facilities in urban and rural areas - statewide, including eight residential facilities, 18 non-residential facilities comprising approximately 590,000 square feet of building space. The CCC has about 1,434 full-time corpsmembers, of which approximately 584 are housed in residential centers. A typical residential facility includes dormitories, administration, educational, recreational, warehouse, dining, and kitchen space and house 80 to 100 corpsmembers. Residential facilities operate 24 hours a day, seven days a week. The non-residential facility includes educational and administrative space which serves from 30 to 60 corpsmembers and operates five days a week.

The CCC has made significant first steps in meeting the goals of Executive Order B-18-12 by implementing procurement strategies, participating in the Governor's Office, Sustainable Building Work Group, and timely reporting base year and ongoing monitoring of energy, gas water and greenhouse gas (GHG) emissions as required. Our Camarillo Center is a 'LEED Certified' facility that is also in the DGS test pilot program for Zero Net Energy (ZNE). Energy audits will be conducted at all CCC facilities over the coming year or two. In addition, we anticipate receiving DGS reports on ZNE options for selected existing residential centers to meet the "green" goals planned at the CCC within this fiscal year.

In this section of the Roadmap: Water Efficiency and Conservation, we have certainly gone after low, to no cost methods to reduce water usage. At a quick glance it may appear the CCC's water usage has risen from our baseline year; however this is due to the CCC residential expansion - we are proud to report our per capita usage has decreased by over 13% in 2016. We strive to do more although we are not funded, nor staffed, for undertaking the large task of sustainability. We will continue to seek out every opportunity to expand our efforts as well as take advantage of assistance from the utilities, DGS, DWR and other departments. We will continue to strike a balance with program expansion and conservation efforts.


Bruce Saito
Director

SUSTAINABILITY GOALS

The Governor has directed California State Agencies to demonstrate sustainable operations and to lead the way by implementing sustainability policies set by the state. Sustainability includes the following general initiatives:

- Greenhouse Gas Emissions Reductions
- Building Energy Efficiency and Conservation
- Indoor Environmental Quality (IEQ)
- Water Efficiency and Conservation
- Monitoring Based Building Commissioning (MBCx)
- Environmentally Preferable Purchasing (EPP)
- Financing for Sustainability
- Zero Emission Vehicle (ZEV) Fleet Purchases
- Electric Vehicle Charging Infrastructure
- Monitoring and Executive Oversight

The Governor has issued numerous executive orders directing sustainable state operations. The orders relevant to water are:

Executive Order B-18-12

EO B-18-12 and the companion *Green Building Action Plan* require state agencies to reduce the environmental impacts of state operations by reducing greenhouse gas emissions, managing energy and water use, improving indoor air quality, generating onsite renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups; the staffs level Sustainability Working Group and the executive level Sustainability Task Force, to ensure these measures are met.

Executive Order B-18-12 requires State agencies to reduce agency-wide water use by 10 percent by 2015 and 20 percent by 2020 as measured against a 2010 baseline. The 2015 and 2020 targets reinforce the SB X7-7 requirement that State agencies reduce water use at facilities they operate to support local water suppliers in meeting their targets.

On February 28, 2013, the California Department of Water Resources issued its Water Use Reduction Guidelines and Criteria, pursuant to Executive Order B-18-12. Each applicable agency was required to take actions to reduce water use in facilities and landscapes that are operated by the state, including facilities owned, funded or leased. State operated facilities are defined as facilities where the agency has direct control of the buildings' function, maintenance and repair. For leased facilities, the Green Building Action Plan directed at that time that new and renegotiated leases include provisions for water conservation, reporting water use and installation of sub-meters to the extent possible and economically feasible.

All the following sections in this water plan and the accompanying worksheet only repeat the initial criteria and guidelines issued at that time. Only the MWELO requirements have been updated since that time. Additionally, other Executive Orders have followed, strengthening and elaborating on the issues contained in EO B-18-12.

EO B-18-12 requires that beginning January 2013, agencies shall regularly report current water use into the water tracking database. Since January 2014, annual water use reports have documented progress towards the 2015 and 2020 targets using the ESPM http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager_benchmarking to track energy and water use and to submit annual reports to DGS. (Sustainability Manager, Department of General Services, 707 Third Street, 8th Floor, West Sacramento, CA 95798-9052). Additionally, for facilities with landscape areas over 20,000 sq. ft., the landscape water use must be tracked with a water budget program.

Executive Order B-29-15

EO B-29-15 directs state agencies to take actions in response to the ongoing drought and to the State of Emergency due to severe drought conditions proclaimed on January 17, 2014. The Governor directed numerous state agencies to develop new programs and regulations to mitigate the effects of the drought, and required increased enforcement of water waste state wide. Agencies were instructed to reduce potable urban water use by 25 percent between 2013 and February 28, 2016.

Executive Order B-30-15

EO B-30-15 declared climate change to be a threat to the well-being, public health, natural resources, economy, and environment of California. It established a new interim statewide greenhouse gas emission reduction target of 40 percent below 1990 levels by 2030, and reaffirms California's intent to reduce greenhouse gas emissions by 80 percent below 1990 levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions.

Other Relevant Executive Orders

Executive Order B-37-16

EO B-37-16 builds on what were formerly temporary statewide emergency water restrictions in order to establish longer-term water conservation measures, including permanent monthly water use reporting, new permanent water use standards in California communities and bans on clearly wasteful practices such as hosing off sidewalks, driveways and other hardscapes. The EO focuses on using water more wisely, and eliminating water waste by taking actions to minimize water system leaks. DWR estimates that leaks in water district distribution systems siphon away more than 700,000 acre-feet of water a year in California - enough to supply 1.4 million homes for a year.

The EO further strengthens local drought resilience and looks to improve agricultural water use efficiency and drought planning. State agencies are to cooperate with urban water management plans which include plans for droughts lasting for at least five years by assuring that the water efficiency and conservation plan has drought contingency actions.

State Administrative Manual & Management Memos

The following sections of the State Administrative Manual (SAM), and associated Management Memos (MM), currently impose sustainability requirements for water on the department under the Governor's executive authority:

SAM Sections

- Landscaping practices 1821.5
- Drought moratorium 1821.4

Relevant Management Memos

- MM 15-06 State Buildings And Grounds Maintenance And Operation
- MM 15-04: Energy Use Reduction for New, Existing, and Leased Buildings
- MM 14-02 Water Efficiency and Conservation
- MM 14-07: Standard Operating Procedures For Energy Management In State Buildings
- MM 14-09: Energy Efficiency in Data Centers and Server Rooms

Relevant Legislation

Sustainable Groundwater Management Act of 2014 - The [Sustainable Groundwater Management Act](#) (SGMA) directs the Department of Water Resources (DWR) to identify groundwater basins and sub basins in conditions of critical overdraft. Conditions of critical overdraft result from undesirable impacts, which can include seawater intrusion, land subsidence, groundwater depletion, and/or chronic lowering of groundwater levels. As defined in the SGMA, "A basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."

As required in the SGMA, basins designated as high or medium priority *and* critically over drafted shall be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2020. All other high and medium priority basins shall be managed under a groundwater sustainability plan by January 31, 2022.

WATER EFFICIENCY AND CONSERVATION REPORT

This Water Efficiency and Conservation Report demonstrates to the Governor and the public the progress the Department has made toward meeting the Governor's goals. This report identifies successful accomplishments, ongoing efforts, and outstanding challenges.

Introduction

California experiences the most extreme variability in yearly precipitation in the nation. In 2015, California had record low statewide mountain snowpack of only five percent of average while 2012-14 were the four driest consecutive years of statewide precipitation in the historical record. Now, the 2017 water year (October 1, 2016-September 30, 2017) is surpassing the wettest year of record (1982-83) in the Sacramento River and San Joaquin River watersheds and close to becoming the wettest year in the Tulare Basin (set in 1968-69). These potential wide swings in precipitation from one year to the next show why California must be prepared for either flood or drought in any year.

Therefore, using water wisely is critical. The EOs and SAM sections listed in the previous section help demonstrate the connection between water and energy use, (the water-energy nexus), water and climate change, and water and landscaping. Further, the impact of water uses by state agencies goes beyond the scope of these EOs and SAM sections and DGS management memos as these documents do not address such related issues as water runoff from landscaping and various work processes and the potential for water pollution or the benefits of water infiltration, soil health and nutrient recycling. However, by using holistic water planning, a well-crafted water plan can not only meet all state requirements but also add considerable value and benefits to the organization and surrounding communities.

Department Mission and Built Infrastructure

Modeled after the Civilian Conservation Corps of the 1930's, the California Conservation Corps (CCC) is comprised of young adults ages 18 to 25 (and veterans up to age 29) working on conservation projects on public lands in cities and rural areas. Through their service, corpsmembers gain work experience, advance their education and learn about careers while helping to enhance California's natural resources and its communities. Corpsmembers complete more than 2,000 conservation projects annually, ranging from restoring fish and wildlife habitat to installing energy and water-efficient improvements, building trails, and improving forest health. As one of the state's emergency work forces, the CCC responds to fires, floods, pest infestations, earthquakes and oil spills.

In addition to sponsor work projects, a typical week for corpsmembers include, physical fitness activities as well as academic and technical training and career development. Corpsmembers also contribute their time to community volunteer projects on weekends. After successfully

completing a year of service, corpsmembers are eligible to receive a scholarship toward continuing education or training.

Corpsmembers are selected for participation without regard to their employment or educational experience and come from diverse backgrounds. Many have limited work experience and about 30 percent do not have high school diplomas. More than 120,000 young adults have worked approximately 74.1 million hours within the CCC since it was founded in 1976. Currently, the CCC has 1,434 full-time equivalent corpsmembers, of which approximately 584 are housed in residential centers.

The CCC is headquartered in Sacramento and currently owns and leases 26 facilities in urban and rural areas statewide, including eight residential facilities, 18 non-residential facilities, and several seasonal backcountry locations comprising approximately 595,000 square feet of building space. The CCC also develops and provides partial funding for 14 local conservation corps in neighborhoods through the state. The typical residential facility of approximately 50,000 square feet includes dormitory, educational, dining and kitchen, administration, recreational, and warehouse space. The residential facilities house from 80 to 100 corpsmembers and operate 24 hours a day seven days a week. The non-residential facility includes educational and administrative space. Non-residential centers typically serve from 30 to 60 corpsmembers, operates about 12 hours per day five days a week and are approximately 10,000 square feet.

Table 1 below shows the total water (in gallons) purchased by the CCC in 2016, however cost data was not recorded. Offsetting purchased water is a small water catchment system at Los Padres Center in San Luis Obispo. Annually the center collects approximately 44,000 gallons of rain water which is used to irrigate native plants for project related work. The center also collects rain water for irrigating fruit trees and gray water for other landscape watering.

Table 1: Total Purchased Water (2016)

Purchased Water	Quantity	Cost (\$/yr)
Potable	9,985,980 gallons	\$ N/A
Recycled Water	0 gallons	\$ N/A
Total	9,985,980 Gallons	\$ N/A

In Table 2 on the next page only our corpsmember population was used to calculate per capita data. Our Camarillo Center is the only facility in which irrigation water is metered separately from potable water.

Table 2: Properties with Largest Water Use Per Capita

Building Name cms = corpsmembers	Area (ft²)	2016 Total Gallons	Total Irrigation in Gallons (if known)	Gallons per Capita per day
Camarillo Center (owned) 92 cms	49,800	2,525,424	1,284,405	75.2
Greenwood Center (leased) 65 cms	25,320	1,965,880	Unknown	82.9
Tahoe Center (owned) 100 cms	51,584	1,448,977	Unknown	39.7
Fortuna Center (leased) 100 cms	27,656	979,948	Unknown	26.8
Placer Center (owned) 95 cms	44,500	950,026	Unknown	27.4
Total for Buildings in This Table	198,860 ft²	7,870,255 (B)		252.0
Total for All Department Buildings	594,583 ft²	Y		---
% of Totals	33.4 %	B/Y %		---

For table 2a, the CCC has yet to fully determine the total sq. ft. of landscape area for each facility.

Table 2a: Properties with Largest Landscape Area (2016)

Building Name	Est. Area (ft²)
Camarillo Center (owned)	TBD
Greenwood Center (leased)	25,000
Tahoe Center (owned)	9,122
Fortuna Center (leased)	TBD
Placer Center (owned)	17,000
Total for Buildings in This Table	A ft²
Total for All Department Buildings	X ft²
% of Totals	A/X %

The CCC's challenges have been the lack of funding and staffing required to undertake, not only Water Efficiency and Conservation actions, but all Sustainability Roadmap goals. We continue to work on a sizable backlog of deferred maintenance issues, making our existing portfolio of facilities safe, clean and in good repair. We have many more years of effort before we can then begin to change the tide of deferred maintenance work, to preventive maintenance work, at all of our facilities. Without extraordinary funding, resulting in moneys and staffing available and dedicated to sustainability, it will continue to be a challenge to make significant strides towards sustainability goals.

The CCC's EDRiP crew had performed water audits at seven of our facilities to promote the Governor's water efficiency and conservation goals. The focus of the water audits was not only on water reduction measures, but also to identify measures to effectively utilize non-potable water (rainwater). The audit results will be used to determine what retrofit activities can be undertaken by the department.

Table 3 shows a notable 13.3 percent reduction in water use per capital in comparing the base year to 2016.

Table 3: Department Wide Water Use Trends

Year	Total Occupancy /year	Total Amount Used (Gallons/year)	Per capita Gallons per person per day
Baseline Year 2010	1,310 (approx.)	9,698,494	20.3
2013	1,310 (approx.)	11,726,463	24.5
2016	1,541 (approx.)	9,895,980	17.6
2020 Goal	TBD	TBD	TBD

When the 2010 baseline year was established, the CCC collected water use data on six owned and leased properties with a total base year usage of 9,698,494 gallons. Camarillo Center was added to our portfolio after the establishment of the 2010 base year value. In 2013 Camarillo added over 3 million gallons of water usage and over 2.5 million gallons in 2016. If Camarillo were to be excluded, the CCC would be less than 100,000 gallons of achieving the 25 percent water reduction in 2016.

Table 4 reflects, in simple terms, that the CCC is not meeting the goal of significant water reduction. Rather, its water usage increased by two percent, compared to the baseline year. The reason is, the CCC is in a reinstatement phase of its program. In the next several years to come the CCC may add more new residential centers, and with it, sizeable water use increases.

Table 4: Total Water Reductions Achieved

Total Water Use Compared to Baseline	Total Amount Used (gallons per year)	Annual Gallons Per capita
20% Reduction Achieved		
Less than 20% Reduction	9,895,980 (+2%)	TBD
25% Reduction Achieved		
Less than 25% Reduction Achieved		
Totals		
Department-Wide Reduction		

To promote the Governor's water efficiency and conservation goals, the CCC has made some water saving improvements as identified in the EDRiP water fixture surveys. With limited resources some toilet and urinals have been replaced, low flow aerators installed, and where possible leaks repaired. An organization wide water saving campaign was also implemented to educate staff in general water on saving practices via posters, and email. The campaign identified simple water saving techniques such as turning water off while brushing teeth and scrubbing of hands, which saves approximately three gallons of water for each event; washing full loads of laundry; checking for water leaks; reducing landscape watering durations; and collecting the cold shower water to water landscape, assuming it takes one minute for the water to heat up. The CCC will continue to implement water saving measures as identified in the water surveys.

In Table 5, the CCC has not yet fully implemented recommendations of the EDRiP water fixture survey. As water saving projects are completed, any water savings determined to be attributed to the survey and retro-fits will be recorded here.

Table 5: Summary of Indoor Water Efficiency Projects Completed or In Progress

Year Started	Water Saved (Gallons/yr)	Cost Savings per Year
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0

The CCC has lacked the funding and staffing to fully undertake major water efficiency projects over the last five years. The very limited facilities staff and funding has been dedicated to maintaining our current portfolio of buildings to a minimum standard. In the future, once basic facility maintenance is achieved and preventive maintenance is the norm together with additional staffing and funding, the CCC will be in a better position to reach the sustainability goals.

Regarding Table 6, the CCC does not have any boilers or cooling systems (cooling towers) in its portfolio.

Table 6: Summary of Boilers and Cooling Systems Projects Completed or In Progress

Year Funded	Water Saved (Gallons/yr)	Number of Systems with Water Efficiency Projects	Percent of Department Heating and Cooling systems
2012	N/A	0	0
2013	N/A	0	0
2014	N/A	0	0
2015	N/A	0	0
2016	N/A	0	0

For Table 7, the CCC did not undertake any landscape hardware water efficiency projects at its state-owned or leased facilities.

Table 7: Summary of Landscaping Hardware Water Efficiency Projects Completed or In Progress

Year Funded	Water Saved (Gallons/yr)	Estimated Annual Cost Savings	Total Number of Projects per Year
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	0	0	0

Table 8 reflects that the CCC did not undertake any living landscape water efficiency projects at its owned or leased facilities.

Table 8: Summary of Living Landscaping Water Efficiency Projects Completed or In Progress

Year Funded	Water Saved (Gallons/yr)	Landscape Area MWELO (ft ²)	Climate Appropriate Landscape Area (ft ²)
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	0	0	0

With limited resources, the CCC has not fully implemented Indoor Water Efficiency Projects (Table 5), does not have any facilities with boilers or cooling systems in its portfolio (Table 6), has not implemented any Landscaping Hardware Water Efficiency Projects (Table 7), and has not implemented and Living Landscaping Water Efficiency Projects (Table 8), thus does not have water saving comparison data available at this time. The CCC will work toward implementing these projects in the future, dependent upon available staff resources and funding.

Water Shortage Contingency Plans and Critical Groundwater Basins

Urban water suppliers are required to maintain Water Shortage Contingency Plans that are customized to local conditions. These plans include a staged response to water shortages and droughts lasting up to three years. When implementing the stages of the Water Shortage Contingency Plan, the water supplier will require increasingly stringent reductions in water use.

State agencies are to be aware of their water suppliers' Water Shortage Contingency Plan and the potential impact each stage may have on their water use. State agencies are to have their own contingency plans in place for their building and landscaping water use in order to respond to any stage implemented by the water supplier.

The Sustainable Groundwater Management Act (SGMA) established a new structure for managing California's groundwater resources at a local level by local agencies. SGMA requires, by June 30, 2017, the formation of locally-controlled groundwater sustainability agencies

(GSAs) in the State's high- and medium-priority groundwater basins and sub basins (basins). A GSA is responsible for developing and implementing a groundwater sustainability plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated within its sustainable yield, without causing undesirable results. For those facilities located in critical groundwater basins, state agencies are to work with the local GSA plan.

In Table 9, the CCC has not yet determined if any of its water supply agencies have a water shortage contingency plan, nor has the CCC determined if any of its facilities are located within a critical groundwater basin at this time. With several CCC facilities located in critical groundwater basin locations, a CCC Water Shortage Contingency Plan will be developed by June 2018 in order to respond to any stage implemented by the water supplier. The contingency plan may include water recycling and water reclaiming practices.

Table 9: Number of Buildings with Urban Water Shortage Contingency Plans and in Critical Groundwater Basins (2016)

Number of Buildings with urban water shortage contingency plans.	Number of buildings in critical groundwater basins	Total Amount of water used by buildings in critical groundwater basins (Gallons)
TBD	TBD	TBD

Building Inventories Summary

The CCC has not yet had the funding or staffing to dedicate toward a department wide inventorying, analyzing and determining fixtures to be replaced. We also have yet to digest the results of EDRiP's seven-center audit. Once our existing facilities meet the minimum standard in being safe, clean and in good repair, we anticipate to then perform a department wide internal water fixture audit which may result in future retrofits. Table 10 on the following page reflects fixture replacement counts for only those seven-center audits.

Table 10: Summary of Building Inventory Needs (2016)

Number of toilets to be replaced with 1.25 gallon per flush	Number of urinals to be replaced	Number of faucet aerators to be replaced	Number of showerheads to be replaced @ 2.0 gpm and trickle flow control	Number of clothes washers to be replaced with Energy Star washers	Number of garbage disposals to be replaced	Number of pre-rinse valves to be purchased and replaced
118	4	120	55	22	2	3

Major indoor water use activities for the CCC are related to showering, toilets, and bathroom lavatory use. Additionally laundry and kitchen uses are also major contributors to overall water

use. Replacing fixtures identified in Table 10 will result in considerable water savings at those seven centers. The CCC will replace water use fixtures as funding becomes available.

Heating and Cooling Systems Inventories Summary

The CCC does not have any boilers or cooling systems (cooling towers) in its portfolio, per Table 11.

Table 11: Summary of Boilers and Cooling Systems Inventory

Amount of Water Used for make up (Gallons)	Number of flash tanks to purchase and install	Number of meters to purchase and install	Amount currently reused? (Gallons)	Remaining additional water suitable for other purposes such as irrigation (Gallons)
N/A	N/A	N/A	N/A	N/A

Irrigation Hardware Inventories Summary

Landscaping typically uses 50 percent or more of an agency's total water use. While landscaping serves critical functions, the accompanying irrigation hardware, if not properly installed and maintained, can contribute to water waste. By reviewing and inventorying all irrigation hardware, it is possible to achieve significant water savings.

As seen in Table 12 the CCC has not yet had the funding or staffing to dedicate toward achieving the goals of developing an Irrigation Hardware Inventory Summary, which includes:

- Developing a system map.
- Installing sub meters as needed.
- Identifying downspouts and redirecting water into landscaping.
- Determining optimal pressure range.
- Adding irrigations sensors as needed.
- Determining flow sensing and flow measurements (MWELo requirement for landscapes >5000 sq. ft.):

Table 12: Summary of Irrigation Hardware Inventory (2016)

Number of separate meters or sub-meters to purchase and install	Number of irrigation controllers required with weather or soil moisture adjustment and flow sensing capabilities to purchase and install	Number of backflow prevention devices to purchase and install	Number of flow sensors to be purchased and installed	Number of automatic rain shut-off devices needed	Number of new pressure regulators to purchase and install	Number of new hydrozones needed	Number of new valves to purchase and install	Number of filter assemblies to purchase and install	Amount of drip irrigation to purchase and install (area covered)	Number of booster pumps to purchase and install	Number of rotary nozzles or other high efficiency nozzles to purchase and install
TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Living Landscape Inventory

Far from being just an aesthetic or ornamental feature, landscaping plays a critical role around public buildings and facilities. From providing safety and security, to reducing local heat islands, suppressing dust, reducing water runoff, maintaining soil health, aiding in water filtration and nutrient recycling, landscaping around public buildings is essential. Further, landscaping in public places frequently surrounds historic places and public memorials as well as provides pleasant public gathering spaces. The health and proper maintenance of these landscapes is vital to the physical wellbeing of California's people as well as to its social, cultural, political and historical life.

Additionally, the many vital ecosystem functions carried out by living public landscaping are critical in helping California meet its goals for greenhouse gas reduction, climate adaptation, and water and energy efficiency and water conservation.

Urban forests are vital to improve site conditions for occupants and visitors to buildings and the surrounding community. Large shade trees should be considered valuable infrastructure and given priority over other plants to maintain tree health. A voluntary urban forest plan is encouraged to assess individual trees and plan for additional tree plantings.

As noted in Table 13, the CCC has yet not had the funding or staffing to dedicate toward achieving the goals of developing a Living Landscape Inventory, which includes:

- Inventorying all landscape, distinguishing between areas of turf and other types of landscape.

- Identifying historical features or designated memorials.
- Mapping out the irrigation system.
- Identifying system booster pumps and high efficiency spray nozzles.
- Developing timelines and budgetary costs.

Table 13: Summary of Living Landscape Inventory (2016)

Landscape >500Sq. ft.)	Turf (Sq. ft.)	Number of historical sites Or memorials	MWEL landscape area (Sq. ft.)	Climate appropriate landscape area (Sq. ft.)
TBD	TBD	0	TBD	TBD

Large Landscape Water Use

Large landscape water use often represents a significant percentage of a facility's water use and significant water savings can often be achieved through better irrigation scheduling or inexpensive improvements in irrigation hardware. As part of the Water Use Guidelines and Criteria, the water use for landscape areas over 20,000 sq. ft. shall be tracked through a water budget program.

The CCC's Camarillo and Tahoe Centers have the largest landscape areas consisting of native drought tolerant landscaping. Most CCC landscaped areas are watered with potable utility provided water, with a conservative approach. Placer Center utilizes agriculture (ditch) water for its landscaping needs.

For Table 14, the CCC has not yet had the funding or staffing to dedicate toward achieving the goals of developing a landscape water budget, landscape watering management, survey of existing landscape areas, landscape staff or WaterSense certified personnel.

Table 14. Summary of Large Landscape Inventory and Water Budget (2016)

Number of Facility Sites/Locations with > 20,000 sq. ft. of Landscaping	Total Landscape Area per facility	Total Water Budget per facility	Total EPA WaterSense or Irrigation Association Certified Staff
TBD	TBD	TBD	0

BMPs

Building Best Management Practices (BMPs) are ongoing actions that establish and maintain building water use efficiency. State agencies are required by DGS Management Memo 14-02 to implement the building BMPs outlined below.

The CCC desires to attain the position of have tools and staffing in place to develop and maintain BMPs, however the reality is deferred maintenance and emergency repairs must take priority to maintain a safe, clean and a well-maintained facility. As time, money and staffing availability allows, the CCC will certainly develop and deploy BMPs when circumstances dictate.

Building Water Management BMPS

The CCC has not yet established building water management BMPs. If not prior, certainly upon the onset of a serious drought, we would establish building water management BMPs to include but limited to the following:

General Water Management

- Track monthly water use.
- Investigate unusual variations in water usage.

Leak Detection and Repair

Perform monthly visual leak detection survey on all water use fixtures:

- Sinks – Kitchen, Laundry, Janitorial, Lavatories
- Toilets
- Urinals
- Faucets - Check faucets for proper aerators (kitchen faucets 2.2 gpm and lavatory faucets 0.5 gpm), and install aerators or laminar flow devices if necessary.
- Showers - Check showerhead flow rates and install showerheads using no more than 2.0 gpm with trickle flow controls.
- Hose bibs and Irrigation lines

Kitchens

- Replace any broken or damaged dishwasher racks, and run dishwasher only when full to maximize capacity.
- Check all equipment water temperatures and flow rates against the manufacturer recommendations. Use the recommended minimum temperature and flow to maximize savings.
- Turn off the continuous flow used to wash the drain trays of the coffee/milk/soda beverage island. Clean thoroughly as needed.
- Adjust ice machines to dispense less ice if ice is being wasted.
- Reduce the flow to dipper wells (troughs) for ice cream and butter scoops, and other frequently used utensils.
- Presoak utensils and dishes in basins of water, rather than in running water.
- Do not use running water to melt ice in bar sink strainers.

- Do not use running water to defrost food.
- Do not allow water to flow unnecessarily.

Laundry Facilities

- Run washer only when full to maximize capacity.
- Set water level and water temperature appropriate according to the load.

Building Heating and Cooling Systems BMPs

The CCC does not have HVAC systems that include boilers or cooling towers.

Landscaping Hardware Maintenance BMPs

The CCC has three owned centers, Placer, Camarillo and Tahoe. Both Placer and Tahoe have a maintenance mechanic who provides basic irrigation system maintenance. Camarillo has a landscape service who provides professional irrigation system maintenance. Irrigation systems all include electronic control systems, backflow preventers and appropriate check valves. As needed, spray nozzles are replaced, faucet timers are installed and quick shut-off valves are attached to hoses where required.

Living Landscape BMPs

The CCC has not yet established a Living Landscape BMPs. If not prior, certainly upon the onset of a serious drought, we would establish a living landscape BMPs to include but limited to the following:

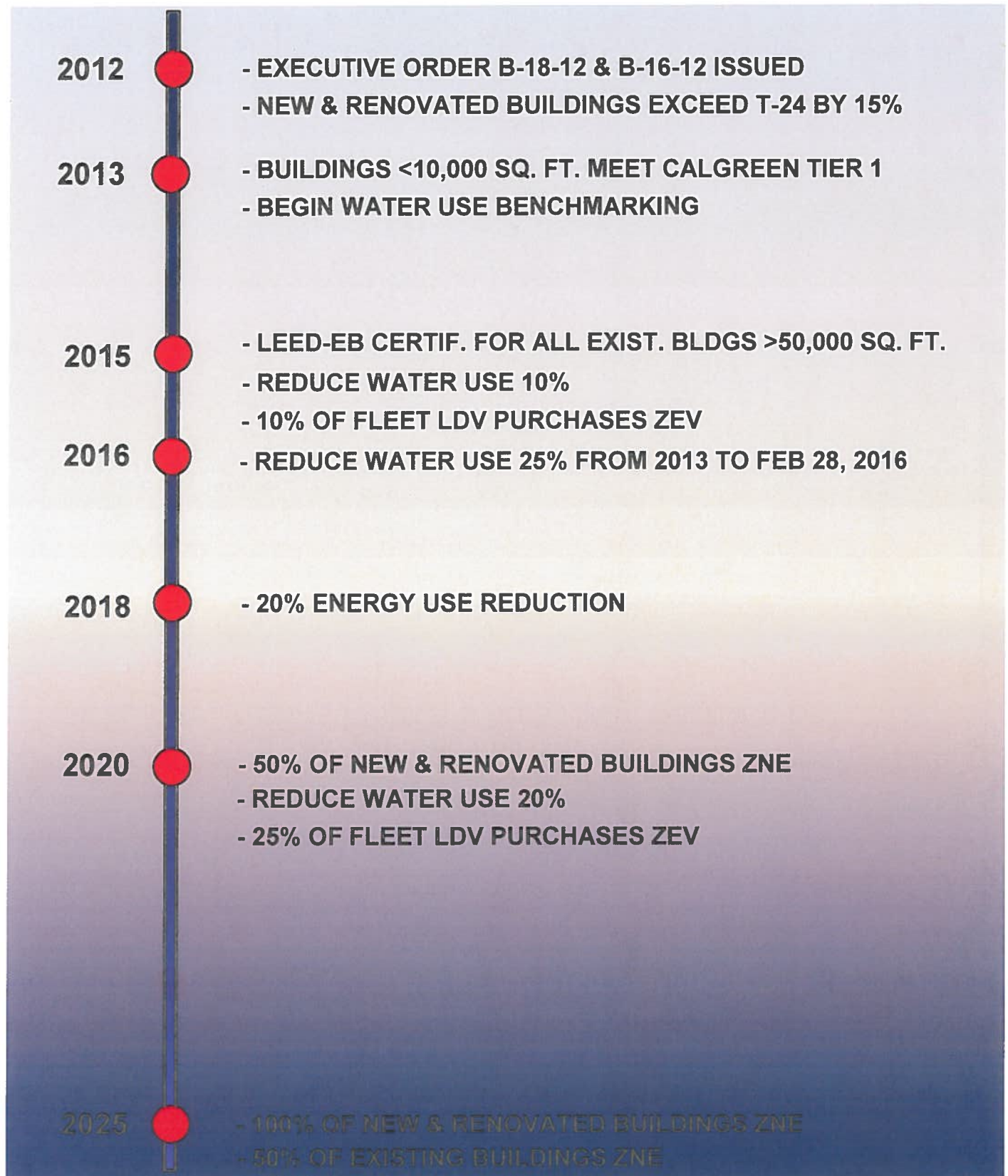
- A water priority protocol by assigning value to trees and plants. Heritage, memorial and shade trees together with large scrubs would be given highest priority for survival.
- Continue to water trees and shrubs on an as needed basis.
- Refresh mulch as needed. Soil to be covered by a minimum of three inches of mulch.
- Manually or set-up automatic adjustments to the irrigation schedule for seasonal changes.
- Test irrigation system monthly to check for leaks and misalignment, and other malfunctions. Repair immediately with the correct parts. Adjust irrigation systems as needed.
- Schedule watering for early morning or in the evening when wind and evaporation are lowest. Never water between 10a.m. and 6p.m.
- Make sure sprinklers are directing water to only landscape areas, avoiding hardscapes such as parking lots, sidewalks, or other paved areas. No irrigation water should ever be permitted to leave the site.
- Use WUCOLS to find plant water use requirements and only water landscapes according the plant water needs.
- Plant species native to the climate zone.

- Use bio-swales and other forms of rainwater capture to keep water onsite.
- Incorporate plantings for pollinators
- When planting new areas or replacing plants, add compost to the soil (entire planting areas, not just planting holes) at a rate of four cubic yards per 1,000 square feet to a depth of six inches, unless contradicted by a soil test.

Monitoring, Reporting and Compliance

The CCC reports annual water usage on EnergyStar for its state owned and leased facilities. This data is then compared to baseline usage for compliance with water use reduction targets. Water use is measured at facilities that have meters and sub meters. As the budget allows, the CCC will include in the project's scope of work for individual building utility metering.

SUSTAINABILITY MILESTONES & TIMELINE



RESPONSIBLE DEPARTMENT, PROGRAMS AND EMPLOYEES

Indoor Water Efficiency Projects In Progress First initiative	
Steven Fultz	Departmental Construction and Maintenance Supervisor, Facilities Unit
Ron Sanchez	Associate Business Management Analyst, Facilities Unit

Landscaping Hardware Water Efficiency Projects In Progress	
Steven Fultz	Departmental Construction and Maintenance Supervisor, Facilities Unit
Ron Sanchez	Associate Business Management Analyst, Facilities Unit

Living Landscaping Water Efficiency Projects In Progress	
Steven Fultz	Departmental Construction and Maintenance Supervisor, Facilities Unit
Ron Sanchez	Associate Business Management Analyst, Facilities Unit

Buildings with Urban Water Shortage Contingency Plans In Progress	
Steven Fultz	Departmental Construction and Maintenance Supervisor, Facilities Unit
Ron Sanchez	Associate Business Management Analyst, Facilities Unit